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of the station from doing some teaching in soil chemistry for example, or the professor of botany of the college from taking advantage of the work and, so far as possible, sharing the interests of the botanist of the experiment station.

The main necessities then for the increased efficiency of our agricultural experiment stations would seem to be:

1. A centralized management, with the direction and distribution of all experimental work left to a single board of control, preferably to be connected with the United States Department of Agriculture.

2. A system of civil service appointments to positions in all Federal stations, and an elasticity in the organization of the different staffs, making possible the transfer of scientific workers from one station to another according to the judgment of the governing board.

3. The complete separation of the experimental research work of the station investigators and the pedagogical work of the college teachers of science in localities where the experiment station is located on the grounds of a state institution. This would necessitate an increased salary roll in both the college and station, but would increase the working efficiency of both in a far greater ratio.

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INJURIES TO THE EYE, CAUSED BY INTENSE LIGHT.

MR. FRANK ALLEN'S observations in these columns (January 17, 1902, p. 109) suggests an experience of my own which is worth recording in some detail.

Last April I ran the projection lantern one evening for a friend, the exercise lasting nearly two hours. The lantern is an arc lamp, hand feed, and the current was giving some trouble. The arc had to be kept rather short, and it was necessary to look in at the arc very often. To guard my eyes from the glare, I had three thicknesses of blue glass in front of the arc. Yet I noticed that my eyes were being injured. At the close of the lecture there was a distinct dimness in the center of my field

of vision. This has often happened after looking at a bright light, and I thought nothing of it. Next morning, however, my neighbor at breakfast wore a bright yellow rose, and I noticed a distinct spot of pink on it, yet on examining it closely there was no pink, or at least only a trace of pink in the center of vision. At a distance of six feet the whole rose was pink.

On the street that morning, an orange peel on the walk at a distance of twelve feet was bright red; on a nearer view only a central spot was red. And every yellow house had a pink spot, and every orange surface a red one from that time on. Then I saw that in reading there was a gray area on the page in the center of vision.

It was plain that focusing so long on the arc through the blue glass had paralyzed or killed the cones in the *fovea centralis* and its immediate vicinity—that is, such cones as normally respond to the short waves at the blue end of the spectrum. So my eyes in that area of the retina responded only to the longer or red waves from the rose or the orange, and in ordinary vision I was deprived of just that much illumination.

This condition persisted in a very striking way all summer, but gradually disappeared in the autumn, and now, at the end of ten months, I can discover no trace of the dimness in the center of vision, nor can I see any trace of pink in a yellow surface. So whatever the disability was, it has been overcome. If the cones were destroyed, they have been replaced; and if only paralyzed, they have resumed their normal function.

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A GEOGRAPHICAL SOCIETY OF NORTH AMERICA.

TO THE EDITOR OF SCIENCE: Referring to the very interesting letter from Professor W. M. Davis (SCIENCE, XV., No. 373, p. 313, February 21, 1902), there seems to be no reason why the aims of the professional geographer should exclude any non-professional who is anxious to keep in touch with the latest advances in geographical knowledge.

Their need is apparently mutual. The pro-

professional should be glad of all the support, moral and financial, which he can secure throughout the community, while there are many students who wish to keep advised of all progress as it is made.

Let the 'professionals' constitute the 'members' of the Society and let the test for 'membership' be as rigid as may be found necessary, so that being a member shall constitute *prima facie* evidence to the world of established professional ability and experience.

Let there also be a class of 'associates,' who shall include any respectable person of legal age (duly elected) who desires to join and is willing to pay the established dues.

All members should be elected as associates and any associate should have at all times the privilege of applying to a 'board of examiners' for election to full membership.

This course of procedure has been found satisfactory in the American Institute of Electrical Engineers and in other engineering bodies. It preserves to the professional all the honor and exclusiveness which he can desire, yet serves to draw into a compact and powerful organization all who for any reason wish to keep in touch with the most recent advances.

Such an inclusive policy would seem to be the wise course for all of our scientific societies, each of which is supposed to exist for the purpose of educating the public at large and of arousing a widespread interest in its specialty as well as for the benefit of its professional members.

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THE PHYSIOLOGICAL EFFECTS OF THE ELECTRICAL CHARGE OF IONS.

IN No. 374 of SCIENCE Professor Lee gives a review of the Chicago meeting of the American Physiological Society in which he says that I 'maintained that vital phenomena, in general, are caused by the electrical charges of ions.' I wish to state that I have never held nor expressed such an opinion.

JACQUES LOEB.

THE UNIVERSITY OF CHICAGO,
March 3, 1902.

NOTES ON INORGANIC CHEMISTRY.

IN proposing the toast, 'The Houses of Parliament,' at the annual dinner of the fellows and associates of the Institute of Chemistry held in London last December, Professor Ramsay referred to the recent jubilee of Professor Berthelot in Paris and the cooperation of the French government with the scientific societies in honoring the distinguished chemist. He then said that while the British government often has occasion to take the advice of scientific experts, it does not as a rule honor science generally in the persons of those who have most distinguished themselves, as is done in many other countries. He called attention to the work of the chemists of the United States Geological Survey, and regretted that this example is not followed by the Geological Survey of Great Britain. Touching upon the question of water supplies, he gave it as his opinion that, valuable as the bacteriological examination of water is, it must be looked upon as merely confirmatory of the examination of the chemist. In responding to this toast for the House of Commons, Mr. Hanbury remarked incidentally that science would be of incomparably more practical value if its 'hideous terminology' could be done away with.

THE question of the existence of the ammonium radical, NH_4 , has been very exhaustively studied by Moissan, whose results are published in the *Comptes Rendus* and in the *Archives Néerlandaises*. His methods included the electrolysis of ammonium chlorid and ammonium iodid in solution in liquid ammonia, the examination of ammonium amalgam at a temperature as low as -90° , where the amalgam is perfectly stable, and the action of liquid hydrogen sulfid on lithium-ammonium and calcium-ammonium at -75° . In none of the experiments was any evidence of free ammonium found, incidentally confirming the recent results of Ruff. Moissan believes, however, that under some circumstances a hydrid of ammonium, NH_4H , is capable of existence.

The passivity of iron has been studied from the standpoint of physical chemistry by Finkelshtein. Determinations of its polarization